CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY

Name(s)

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Project Number

J0625

Project Title

Which Element Produces the Greatest Amount of Hydrogen in the Electrolysis of a Water and Sodium Hydroxide Solution?

Abstract

Objectives

I have investigated the production of hydrogen gas using multiple elements by running an electric current through water and sodium hydroxide.

Methods

I made an apparatus with two various electrodes and measured the amount of hydrogen created from a solution of water and sodium hydroxide.

Results

I found that aluminum created the most hydrogen due to the addition of a reaction without the input energy.

Conclusions

Contrary to my hypothesis that carbon would produce the greatest amount of hydrogen, the use of aluminum as a cathode produced the most hydrogen gas as both endothermic and exothermic reactions occurred. Other metals produced great amounts of hydrogen but not as significant as aluminum. This process can be important information toward the development of hydrogen-powered cars or electrical devices in the future.

Summary Statement

I determined that aluminum was the most efficient electrode in producing hydrogen from electrolysis especially in a water and sodium hydroxide solution.

Help Received

My science teacher and parents advised and guided me through my project. No other help was involved.